

(3.5) - Multiplying Polynomials & Expanding Binomials

Recall: Multiplying two linear terms together forms an area.

We can often represent this multiplication using algebra tiles.

On paper, we can represent this:

- (a) graphically (an area model), or
- (b) algebraically

Definitions:

1. Monomial - an expression with a single term

$3x$  or  $7$  or  $5xy$  or  $a^2bc^3$

2. Binomial - an expression with two terms

$(2x + 5)$  or  $(a + 2b)$  or  $(m^2 - pq)$

What is a **term**? A number or a variable or the product or quotient of numbers and variable.

3. Trinomial - an expression with three terms

$x^2 + 5x + 6$  or  $2xy + a + 5$

4. Polynomial - an expression with any number of terms.

Evaluate:  $(x - 1)(x - 2)$

What does the area represent?

$$x^2 - 3x + 2$$

What are the side lengths?

$$(x - 1)(x - 2)$$

$\ell \quad w$

Ex.1 Evaluate using an area model

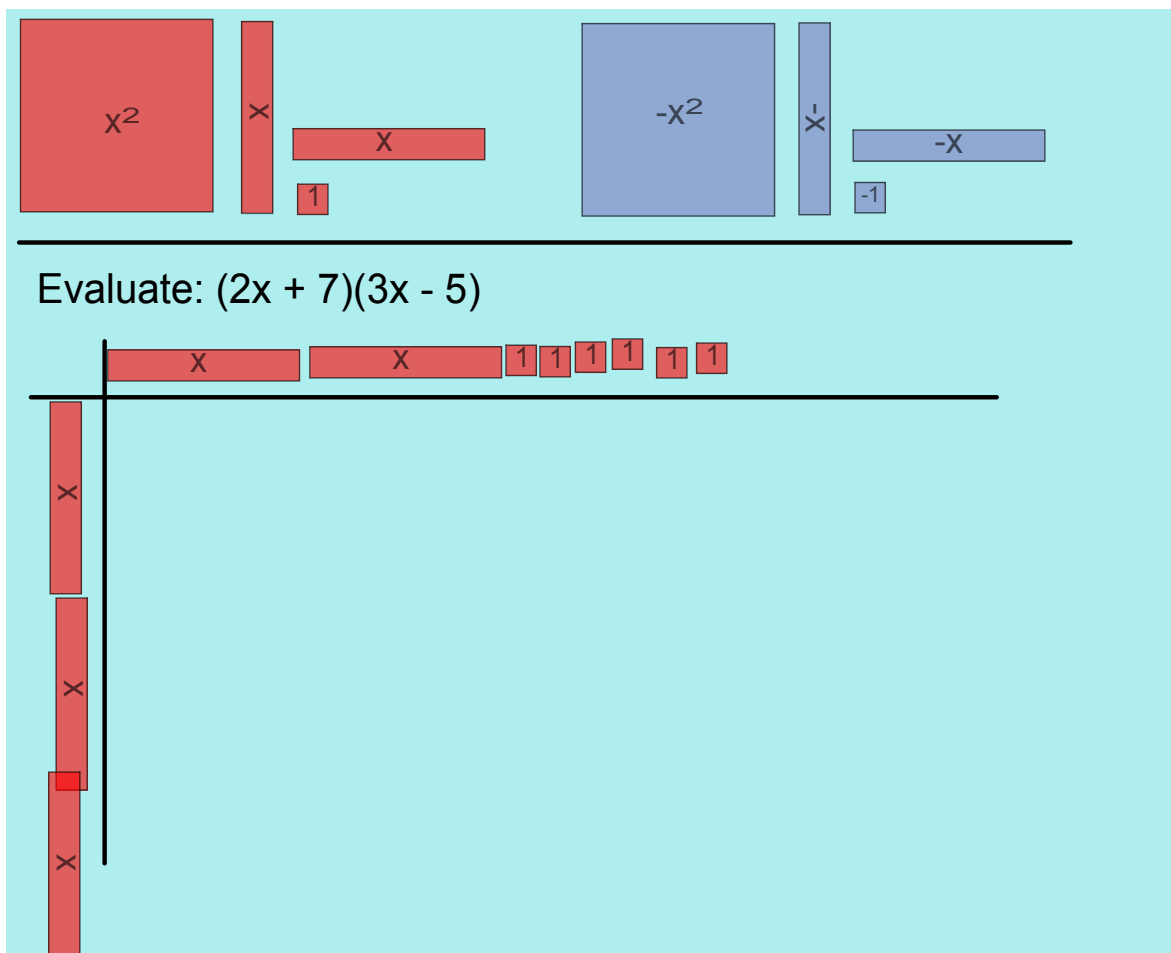
(a)  $(x - 1)(x - 2)$

$(3x + 7)(4x + 5)$

$x^2 - 2x - 1x + 2$

	$x$	$-1$
$x$	$x^2$	$-1x$
$-2$	$-2x$	$2$

$x^2 - 3x + 2$



Ex.1 Evaluate using an area model... continued

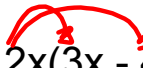
(b)  $(2x + 7)(3x - 5)$

	$2x$	$+7$
$3x$	$6x^2$	$21x$
$-5$	$-10x$	$-35$

$= 6x^2 + 11x - 35$

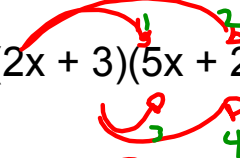
Ex.2 Evaluate using the distributive property

(a)  $2x(3x - 4)$



$$= 6x^2 - 8x$$

(b)  $(2x + 3)(5x + 2)$

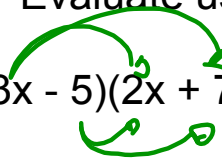


$$= 10x^2 + 4x + 15x + 6$$

$$= 10x^2 + 19x + 6$$

Ex.3 Evaluate using FOIL (First-Outer-Inner-Last)

(a)  $(3x - 5)(2x + 7)$



$$= 6x^2 + 21x - 10x - 35$$

$$= 6x^2 + 11x - 35$$

Assigned Work: p.166-167 # 3 to 5 (odd), 8 to 10 (odd)